

## WHAT IS CLAIMED IS:

1. A microfluidic unit array comprising a plurality of microfluidic units in an organized array, each unit comprising a microfluidic network of reservoirs connected by interconnected channels of capillary dimensions including a primary flowpath and at least one secondary flowpath, each unit having a reservoir positioned in the array in the same format of a source array of at least one of samples and reagents.

2. A microfluidic unit array according to Claim 1, wherein the number of units is a multiple of 8 and each of the rows of units has at least 8 units.

3. A microfluidic unit array according to Claim 1, wherein said format is a 96 well micro titer well format.

4. A microfluidic unit array, wherein said microfluidic unit array comprises a substrate in which microfluidic units of said microfluidic unit array are formed, said microfluidic units comprising a microfluidic network of a plurality of reservoirs connected by interconnected channels including a primary flowpath and at least one secondary flowpath, and a film enclosing said interconnected channels, wherein reservoirs for receiving at least one of samples and reagents are positioned in the array in the same format of a source array, wherein said source array is a microtiter well plate having a number of wells equal to a multiple of 8.

5. A microfluidic unit array according to Claim 4, wherein said substrate is plastic.

6. A microfluidic unit array according to Claim 4, further comprising electrodes positioned for contact with liquid in said receiving reservoirs.

7. A microfluidic unit array according to Claim 6, in combination with a plate comprising wells for receiving liquid.

5        employing a microfluidic unit array according to Claim 1.